

Liquid and Gaseous Helium Specifications & DOT Shipping Information



CHARACTERISTIC	PROCURED/DELIVERED	DELIVERED (SHUTTLE ONLY)
SPECIFICATION:	MIL-PRF-27407C , Type I Grade A (GHe) / Type II (CH _e)	SE-S-0073, Table 6.3-1
Purity	99.995% by vol. (min.)	99.990% by vol. (min.)
Dew point	-78 °F	N/A
Total hydrocarbons (as methane)	5 ppm by vol. (max.)	5.0 ppm by vol. (max.)
Oxygen	3 ppm by vol. (max.)	10.0 ppm by vol. (max.)
Nitrogen + argon	14 ppm by vol. (max.)	N/A
CO	1 ppm by vol. (max.)	N/A
CO ₂	1 ppm by vol. (max.)	N/A
Nitrogen	N/A	50.0 ppm by vol. (max.)
Moisture	9.0 ppm by vol. (max.)	9.0 ppm by vol. (max.)
Total impurities	N/A	100 ppm by vol. (max.)
Neon	23 ppm by vol. (max.)	N/A
Hydrogen	1 ppm by vol. (max.)	N/A

Note: LHe does not require sampling. If fluid is below the hydrogen triple point (13.8K).

Note: JBOSC provides filtration, typically 20-micron absolute, on various compressor systems. Compressed gas trailers, [MSUs](#), k-bottle manifolds, etc. are not normally equipped with filters.

Usage & Other Data Helium is an inert noble gas used as a pressurant and purge gas in propellant systems. It is the only pressurant available for use with liquid hydrogen since it will not freeze at liquid hydrogen temperatures.

Proper Shipping Name and Container Markings:

49 CFR 172.101 Hazardous Materials Table

Sym-bols	Hazardous material descriptions & proper shipping names	Hazard Class or Division	Identifi-cation numbers	PG	Label Codes	Special Provision	Packaging (173.***)			Quantity Limitations		Vessel Stowage	
							Excep-tions	Non Bulk	Bulk	Passenger aircraft/ rail	Cargo aircraft only	Loca-tion	Other

DOT Hazardous Material Codes and Regulations will explain the letters and numbers.

Sample Table for Gaseous Helium

	Helium, compressed	2.2	UN1046		2.2		Packaging (173.***)			Quantity Limitations		Vessel Stowage	
							306	302	302, 314	75 kg	150 kg	A	85



1046

Sample Table for Liquid Helium

	Helium, refrigerated liquid (cryogenic liquid)	2.2	UN1963		2.2		Packaging (173.***)			Quantity Limitations		Vessel Stowage	
							320	316	318	50 kg	500 kg	B	



1963

Markings for a "bulk container" (over 119 gallon capacity) use 12"-sided placards. An authorized variance would have the identification number replace the words on the primary hazard placard (with the number at the bottom corner). Non-bulk containers would use the similar 3"-sided labels and have "UN(ID#)" nearby. The proper shipping name would also appear near the labels or placards.



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